

THE SOIL AND THE CROPS.

In the October, November, and December numbers of the report for the North Dakota section, Mr. B. H. Bronson publishes some studies in meteorology by Prof. E. F. Ladd, from which we make the following compilation showing the mean temperature of the soil at the depth of 1 inch and 12 inches, the percentage of water in the first foot of soil during the months of the growing season, and finally the average yield per acre in bushels.

This table does not show any simple relation between soil and crop but stimulates further study of the subject.

Soil and crop at Agricultural College, North Dakota.

Year.	May.			June.			July.			August.			September.			October.		
	Mean soil.			Mean soil.			Mean soil.			Mean soil.			Mean soil.			Mean soil.		
	Temperature, 1 inch.	Temperature, 12 inches.	Moisture, per cent.	Temperature, 1 inch.	Temperature, 12 inches.	Moisture, per cent.	Temperature, 1 inch.	Temperature, 12 inches.	Moisture, per cent.	Temperature, 1 inch.	Temperature, 12 inches.	Moisture, per cent.	Temperature, 1 inch.	Temperature, 12 inches.	Moisture, per cent.	Temperature, 1 inch.	Temperature, 12 inches.	Moisture, per cent.
1892.....	48.3	39.4	35	66.5	53.9	30	75.0	69.6	28	72.4	64.0	30	65.5	58.0	28	51.6	51.8	19
1893.....	52.3	38.7	31	69.6	55.6	23	74.9	63.9	28	77.0	63.7	22	68.9	59.7	15	47.2	46.6	24
1894.....	53.1	47.3	28	71.5	60.1	18	73.4	65.3	17	75.0	64.8	10	69.8	58.1	12	42.0	47.3	27
1895.....	62.0	48.1	24	66.0	56.9	22	71.2	62.3	23	77.8	63.3	16	69.2	58.8	19	53.2	47.4	16
1896.....	59.5	47.6	30	65.1	57.3	25	75.9	63.1	12	76.5	63.3	17	60.1	55.7	26	46.8	46.5	12
1897.....	60.0	43.5	...	63.4	53.6	...	72.0	63.9	...	72.7	62.3	...	72.6	61.3	...	50.6	52.2	...
1898.....	56.5	43.0	...	67.4	56.4	...	77.0	63.9	...	73.1	63.4	...	65.5	58.3	...	46.2	47.7	...

Year.	Crop yield, bushels per acre.			
	Wheat.			Oats.
	Experiment plots.	Agricultural farm.	Cass County.	Agricultural farm.
1892.....	19.4	18.6	13.3	36.4
1893.....	9.1	13.7	9.8	31.6
1894.....	18.9	20.7	14.0	59.3
1895.....	23.4	31.4	18.9	50.4
1896.....	16.4	12.6	11.5	49.5
1897.....	13.2	10.5	10.5	39.3
1898.....	22.9	24.3	15.0	70.5

ERRORS IN SCHOOL BOOKS.

According to the November report of the Oregon section the following remarkable statement relative to the climate of Montana appears in the geography adopted by the legislature for the use of the public schools in that State.

"The warm winds known as the chinook winds, from the Pacific, heated by the Japan current, may spring up even in the coldest weather." A gentleman living in Montana writes as follows: "As the Japan current has about as much to do with the climate of Montana. * * * I think the time has arrived to obliterate these errors." Mr. B. S. Pague very properly adds: "The root of the evil is to be found in school text-books and in the ideas of the instructors."

In a recent pamphlet issued by Mr. Pague he has endeavored to educate the people to a more correct view of the dry chinook winds of Montana, which are certainly not due to the Kuroshio or Japan current, nor to any specific influence of the Pacific Ocean, but represent merely one of many cases in which descending air is warmed by compression.

In general, errors that have once been introduced into school text-books are very apt to stick there, and also in the

minds of the scholars and give rise to a fine crop of other errors in future years. Not a day passes but what the Weather Bureau observers throughout the country have to answer a thousand questions suggested by erroneous views disseminated in the school books used in the childhood of the present generation. Even the best of publishers who sends his proof sheets to some Weather Bureau official for revision will occasionally hesitate to cut out a paragraph or alter an expression that seems to him likely to be popular and taking with the people. It is generally said that the text-book which is intended to be committed to memory must not contain anything above the comprehension or contrary to the views of the teacher, since the latter must always be ready to satisfactorily answer the questions of the more intelligent pupils. The teacher is always in a dilemma when he dares to question the text-book and must explain to the scholars, and especially to the school trustees, how he knows that the text-book is wrong. There is a halo around the author's name on the title page of the text-book. He is the authority and not the teacher. His book has been adopted by the State board or the local school board; it has a hundred complimentary letters from distinguished reviewers, and woe to the teacher who impugns its authority or correctness. The true remedy for it all is to insist that every author or publisher shall revise the text-book, no matter at how great an expense, and thus endeavor to keep it abreast with the progress of the times.

Some teachers adopt the rule that the text-book must be used as an authority for dates and facts, but that the author's explanations of the reasons why and his comments on matters of politics or finance may be wholly omitted and replaced by the better personal knowledge of the teacher. In scientific matters this is a safe rule, especially if the teacher is wise enough to point out those cases in which our knowledge is still so unsatisfactory that we are not justified in giving any authoritative explanation.

FRUIT PROTECTION IN FLORIDA.

In the November report of the Florida section, Mr. A. J. Mitchell, writes as follows:

No specious argument is necessary to show that the Florida fruit grower has an abiding faith in the future of orange culture. As a result of the severe freeze of last winter many ingenious devices have been evolved with a view to protecting fruit trees and pineapples. Some of these measures are of undoubted utility; the merits of others are, as yet, problematical. History proves that in every crisis the skill and intelligence of man have been such as to circumvent continued disaster. And so it is with fruit growing in portions of north-central Florida. Previous to 1895 there had been no occasion for considering extreme protective measures. The necessity of preparing for cold weather, however, has now taken such a firm hold upon our fruit growers that thousands of dollars were expended during the past summer with a view to affording ample safety to crops. It is certain that no farmer ever faced disaster with more fortitude than did the Florida horticulturist, and the severe test only stimulated his determination to overcome all difficulties.

A visit through the orange belt of the State would be a revelation to those who, previous to 1895, were familiar with groves developed under normal winter conditions. A suggestion at that time that orange culture would ever require "house protection" would have been regarded as the idle vaporings of the irresponsible. The measures usually adopted are such as to protect against the severest conditions, hence we find hundreds of acres completely inclosed and covered with cypress strips. Nearly all coverings are so arranged as to be readily removed or adjusted so as to admit the sunlight. There seems to be a diversity of opinion regarding the superiority of the shed inclosure as compared with the tent. In both cases provision is made for the use of lamps, one to each tree, or salamanders filled with coke. It is well to add here that these preparations are largely confined to north-central Florida, which, previous to 1895, was the orange belt of the State. In southern counties ordinary fires are regarded as sufficient to meet all exigencies. Many groves, some containing 35 acres, have been covered at a cost of \$400 or \$500 per acre. The interest manifested and